

LORNE J. DOUD

ORCHARDIST & NURSERYMAN

"Quality--Plus" Apples Dwarf Apple Trees

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ROOTSTOCKS FOR APPLE TREES

Following is a description of the apple rootstock that we use for propagating trees. There is a confusing tendency to call the entire Malling series "dwarf" trees; however they range from very small on MIX to standard size on MXII and XVI. Each grower should buy a specific size in relation to his proposed planting distance. In contrast to the Malling series, Clark Dwarf-Hibernal is an entirely different process of controlling tree size, using an "insert" which restricts the flow of sap and produces early bearing in much the same way as ringing or girdling.

Malling I Stock

Semi-dwarfing, producing early-bearing, medium-sized tree. Transplants easily and grows well in orchard. Has proved to be a particularly good stock for McIntosh. Suggested planting distance, 20 x 25 or 30 ft.

Malling II Stock

Semi-dwarfing, producing slightly smaller tree than MI. One of the most promising of the Malling Stocks. Suggested planting distance, 20 x 25 or 30 ft.

Malling VII Stock

Dwarfing, producing smaller tree than MII. Best stock for orchardists desiring a true dwarf. Transplants well, giving excellent stand of trees in orchard. Planting distance, 15 x 25 ft.

Malling IX Stock

True dwarf, making smallest tree of entire Malling series. Early bearing, often producing bloom on two-year-old trees. Most varieties on this stock require staking after tree begins to bear. Some growers plant close enough together in row to graft tips of branches together. Planting distance, 10 x 20 or 25 ft.

Malling XII Stock

Produces standard-sized tree. Row of trees on this stock will be very uniform in size and vigor since roots are all of same variety. Planting distance on smaller trees such as Rome and Transparent, 25 or 30 x 30 or 35 ft.

Malling XIII Stock

Semi-dwarfing, making tree about size of those on MI and MII. Proved to be particularly good stock for Cortland. Also works very well with Jonathan and Golden Delicious. Suggested planting distance, 20 x 30 ft.

Malling XVI Stock

Standard-sized tree giving good uniformity of size and vigor. Same planting distance as on MXII.

Clark Dwarf/Hibernal Stock

Between Malling IX and VII in size of tree. Dwarfing effect is produced by stem-piece of Clark wood grafted between hardy Hibernal trunk and scion-variety top. Planting distance, 15 x 25 ft.

Standard Stock

Grown from seed collected from processing plants. Each seedling is different from the rest, varying in vigor, type of rooting, hardiness, susceptibility to insects and diseases and response to environment. This is in contrast to the Malling series of stocks which are reproduced by layering and are therefore as much a variety as the Delicious or McIntosh that are budded upon it.

DWARF APPLE TREE LIST--FALL, 1955 & SPRING, 1956

<u>ON MALLING I</u>	<u>1 YR.</u>	<u>2 YR.</u>
Red Delicious (Starking type)	127	27
Red Delicious (Kirby type)	120	
Golden Delicious	109	1
Idared	47	
D. R. Jonathan	74	16
Lodi	99	15
D. R. McIntosh		29
Maidenblush		7
Melba		4
Milton		9
Red Duchess	7	
Red Rome	95	6
Redsumbo	85	5
Transparent	8	2
Turley		37
Williams Early Red	5	
<u>ON MALLING II</u>		
Red Astrachan		2
Red Delicious (Starking type)	14	8
Red Duchess	23	15
D. R. McIntosh	83	12
Steel Red		16
<u>ON MALLING VII</u>		
Almata		1
Alton		4
American Summer Pearmain		2
Crandall		5
Red Delicious (Starking type)		13
Red Delicious (Kirby type)	6	
Dunning		2
Franklin	49	
Golden Delicious	6	10
Idared	3	
D. R. Jonathan	131	4
D. R. McIntosh	143	17
Milton	8	2
Minjon		7
Monroe		9
Mother		2
Rambo		5
Red Melba	11	
Red Rome	9	7
Red Wealthy		6
Ruby	38	
N. Spy	167	4
Turley		2
Wealthy		27
<u>ON MALLING IX</u>		
Red Delicious (Starking type)		3
Golden Delicious		32
Hawley		1
Jeffris		2
D. R. Jonathan		6
D. R. McIntosh		5
Redsumbo		1
D. R. Stayman		1
N. Spy		3
Starr		1
Transparent		8
<u>ON MALLING XII</u>		
Red Rome		23
Transparent	23	27

✓ ON MALLING XIII

	1 YR.	2 YR.
Cortland		100
Red Delicious (Starking type)	7	
Duchess		5
Golden Delicious	18	
Jonathan	33	110
D. R. McIntosh	8	
Red Rome		45
Transparent		2
Turley		75
Wealthy		3
Williams Early Red		3

✓ ON MALLING XVI

D. R. Jonathan	47	32
Red Rome	120	1
D. R. Stayman	93	
Transparent		34
Turley	97	27

✓ ON HIBERNAL

Red Delicious (Starking type)		6
Golden Delicious		30
D. R. Jonathan		15

✓ ON CLARK DWARF-HIBERNAL

Cortland		8
Red Delicious (Starking type)		21
Grimes	40	
D. R. Jonathan		3
Lodi		12
D. R. McIntosh	1	
Red Duchess	6	
Red Rome		11
Redsumbo		2
D. R. Stayman		8
N. Spy		14

✓ ON STANDARD

Red Delicious	157	
Golden Delicious		35
Hibernal	1123	
D. R. Jonathan	184	40
D. R. McIntosh	180	
Red Rome	140	14
Redsumbo	30	91
Transparent		18
Turley	91	40

PRICES FOR 1-YR. TREES*

	each 1-9	each 10-25	each 25 & over
Malling I, II, VII, IX, XIII, and Clark Dwarf-Hibernal	2.00	1.75	1.50
Malling XII, XVI	1.50	1.25	1.00
Standard	1.25	1.00	.75

* For two-year, branched trees, add 25¢ per tree.

These prices are f.o.b. our nursery 2 miles south and 1 mile west of Roann, Indiana. Baling and packing for shipment is charged extra at cost.

CONTRACT BUDDING
Prices apply for August, 1956

In order to give fruit-growers and nurserymen the stock-scion combinations they want, we will bud our lined-out material to your order on the basis of the following terms:

1. We bud 10% over your order for delivered trees.
2. We furnish bud-wood of the best strains available or will use buds sent by growers who have a particular strain or variety they desire to have propagated.
3. Customer agrees to take all saleable trees up to the number ordered
4. Customers make deposit of 25% of value of order at budding-time, and remainder before order is shipped. If trees are destroyed by winter, hail, or other natural causes beyond our control, deposit will be refunded or applied on following year at customer's option. If customer cancels order before shipment, he forfeits deposit.

PRICES

	each 1-10	each 10-25	each 25 & over
Malling II, VII, IX, & Clark Dwarf/Hibernal	2.75	2.00	1.50
Malling I, XII, XIII, & XVI	2.00	1.50	1.25
Standard Stock	1.25	.80	.65

14 YEARS OF EXPERIENCE WITH DWARF APPLE TREES

RECEIVED
MAR 6 - 1956
U. S. Department of Agriculture

We began collecting dwarfing rootstock material in 1941. Our Malling series of stocks came directly from the Geneva, N. Y. Experiment Station and the Clark Dwarf from the Iowa Experiment Station. During the years from 1941 to the present, we have been propagating and building up our supply and producing budded trees for orchardists. Our first dwarf trees were planted in the orchard in 1946.

The following observations and comments are offered in response to inquiries regarding our experiences with this type of tree.

EFFECT OF ROOTSTOCK ON SIZE OF MATURE TREES AND SUGGESTED PLANTING DISTANCES

Size in Feet		Rootstock	Planting Distances
20		Standard Rootstock	30 x 35
		Malling XII	
		Malling XVI	
15		Malling I	20 x 30
		Malling II	
		Malling XIII	
10		Malling VII	15 x 25
		Clark Dwarf	
5		Malling IX	10 x 20

FACTORS OTHER THAN ROOTSTOCK AFFECTING SIZE OF MATURE TREES

(1) Scion Variety - On any given rootstock weaker-growing varieties such as Rome and Golden Delicious make a smaller tree at any age than vigorous varieties such as Spy and Summer Rambo. We have a small block of trees on IX planted in the Spring of 1949. The Golden Delicious are now only 5 to 6 ft. tall and have borne apples every year since planting. On the other hand the Redsumbo (Double-Red Summer Rambo) are nearly 10 ft. tall. Even though the IX rootstock has greatly dwarfed both varieties and encouraged early-bearing, the vigorous scion-variety is larger at 6 yrs. than the earlier-bearing, slower-growing one. In our plantings, we have tried to match the variety to the stock to produce the desired size tree.

(2) Soil - Any rootstock will grow a smaller tree on light, sandy soil than on heavy, rich soils. Thus, VII rootstock on rich soil may produce approximately the same size tree as I, II, or XIII on lighter, poorer soil.

(3) Training and Pruning - The present thinking is toward training dwarf apples to a low-headed, open-center type similar to a peach tree. Also, as in the case of peaches, a judicious heading-back type of pruning should be used to maintain the desired tree size after the tree has come into bearing and reached this size. The grower who has the desire and knowledge to use a consistent, size-controlling type of pruning is able to take a semi-dwarf stock like II and produce the same size tree at a given age as another person with trees on VII who merely lets them grow.

(4) Planting Distance - Many commercial growers are planting dwarf trees in a hedge-row system, planning to drive only one way through the orchard. Thus, we have suggested a planting distance of 20x30 for the semi-dwarf stocks. The trees are allowed to grow together in the row with space to drive only the 30' way. This plan allows a slightly larger tree with consequent larger bearing surface than the same number of trees per acre planted 25x25 with space to drive both directions.

(5) Conditions Affecting Fruit Setting - Dwarfing stocks cause all varieties to bloom earlier in their lives than is the case on standard stocks. However, if these first blossoms fail to set fruit because of frost, poor pollination, disease, spray injury or faulty nutrition, the tree goes ahead and continues to grow as vigorously as a standard non-bearing tree. Therefore, the grower who follows good cultural practices to encourage fruit set will get his dwarf trees into a bearing habit sooner.

DWARFING ROOTSTOCKS FOR THE COMMERCIAL ORCHARDIST

We have found that, actually, the semi-dwarf stocks such as I, II, and XIII are not radically-enough different from standard trees that any good apple grower should be afraid to try a percentage of his new plantings on these stocks. They are the same size as standard trees at planting time and start off growing as vigorously for the first year or two or three. They definitely cause any variety to bloom earlier and attain a bearing habit sooner, assuming other conditions are favorable to fruit setting. They enable any good grower to plant twice as many trees per acre, get into production sooner, reach maximum production per acre early in the life of the trees, yet maintain small tree size with a minimum of effort. In this way, the maximum yield per acre can be maintained throughout the life of the orchard, yet the small size of the trees will make all cultural operations easier and cheaper. This type tree thrives best on intensive treatment and are adapted for the grower who will take a special interest in them and give them the best possible care.

FOR FURTHER INFORMATION REGARDING DWARF APPLE TREES WRITE TO:

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